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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,977	01/29/2004	Brian T. Denton	BUR920040007US1	1976
29154	7590	11/18/2009	EXAMINER	
FREDERICK W. GIBB, III Gibb Intellectual Property Law Firm, LLC 2568-A RIVA ROAD SUITE 304 ANNAPOLIS, MD 21401			FLEISCHER, MARK A	
ART UNIT	PAPER NUMBER			
	3624			
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11/18/2009	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/707,977	DENTON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	MARK A. FLEISCHER	3624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 September 2009.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,2,4-9,11-16 and 18-21 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,2,4-9,11-16 and 18-21 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 29 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12 August 2009 and 27 July 2009</u> .                         | 6) <input type="checkbox"/> Other: _____ .                        |

## **DETAILED ACTION**

### **Status of Claims**

1. This final Office action is in reply to the amendments filed on 3 September 2009.
2. Claims 1, 2, 4, 5, 7 – 9, 11, 12, 14 – 16, 18, 19 and 21 have been amended.
3. Claims 3, 10 and 17 have been canceled.
4. Claims 1, 2, 4 – 9, 11 – 16 and 18 – 21 are currently pending and have been examined.

### ***Response to Amendments***

5. The rejections of claims 1, 3, 8, 10, 11, 12, 15, 17, 18 and 19 under 35 U.S.C. §112, second paragraph are withdrawn in light of Applicant's amendments or cancellation.
6. The rejections of claims 7 and 21 under 35 U.S.C. §112, second paragraph are maintained for reasons set forth below.
7. The rejections of claims 1 – 7 under 35 U.S.C. §101 are withdrawn in light of Applicant's amendments.
8. The rejections of claims 8 – 20 under 35 U.S.C. §101 are maintained for reasons set forth below.

### ***Response to Arguments***

9. Applicant's arguments received on 3 September 2009 have been fully considered but they are not persuasive. Referring to the previous Office action, Examiner has cited relevant portions of the references as a means to illustrate the systems as taught by the prior art. As a means of providing further clarification as to what is taught by the references used in the first Office action, Examiner has expanded the teachings for comprehensibility while maintaining the same grounds of rejection of the claims, except as noted above in the section labeled "Status of Claims." This information is intended to assist in illuminating the teachings of the references while providing evidence that establishes further support for the rejections of the claims.

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10. As an initial matter, Applicant is incorrect in their statement that “Hegde only qualifies as prior art under subsection (e) of 35 U.S.C. §102.” (Remarks, p.12-3). Based on this contention, Applicants believe that under the provisions of section 103(c), Hegde should be disqualified as prior art because the assignee is International Business Machines, the assignee of the instant invention. (Remarks, p.13). Applicant however ignores the statutory language of Section 103(c) where the operative term ‘only’, as in “...only under one or more of subsections (e), (f) and (g) of section 102...”, controls whether it applies to a given prior art reference. Hegde however does not qualify as prior art only under section 102(e), but also qualifies as prior art under Section 102(a) which provides that “the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent” (emphasis added). Applicants should note that Hegde was published on April 3, 2003, well before Applicant’s filing date. Thus, the prior publication of Hedge establishes its basis as prior art under 35 U.S.C. § 102(a) and, consequently, the provisions of 35 U.S.C. §103(c) are not relevant.
11. Applicant further argues that the “Official Notice was not properly taken” (Remarks, p.13) and premise this on their belief “that neither Dantzig, nor Karbuk, qualify as documentary evidence for the purpose of taking Official Notice” because “there has been no showing that they are recognized as standard in the pertinent art.” (Remarks, p.14). Applicant also argues that the Official Notice is improper because it was not positively recited in the statement of rejection (Remarks, p.14,15) and that the Official Notices "are not capable of such instant and unquestionable demonstration as to defy dispute" (Remarks, p.14).
12. Examiner respectfully disagrees. As Applicant recognizes, the Official Notice, while not stated in the rejection paragraph itself, is clearly apparent to the Applicant as evidenced by their response to it and the bold typeface indicating the notice in the Office action. Insofar as the propriety of an Official Notice, the MPEP states:

It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known.

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For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21. See also *In re Grose*, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979) (“[W]hen the PTO seeks to rely upon a chemical theory, in establishing a *prima facie* case of obviousness, it must provide evidentiary support for the existence and meaning of that theory.”); *In re Eyned*, 480 F.2d 1364, 1370, 178 USPQ 470, 474 (CCPA 1973) (“[W]e reject the notion that judicial or administrative notice may be taken of the state of the art. The facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of such notice.”). MPEP §2144.03A.

Firstly, the mere fact that the Examiner has chosen to provide documentary evidence does not necessarily indicate that the asserted facts are not capable of “instant and unquestionable demonstration as being well-known”, but assuming *arguendo* that the stated facts are ‘not capable of instant and unquestionable demonstration’, the Examiner has chosen to demonstrate “technical facts in the areas of esoteric technology” (MPEP §2144.03A) and thus has provided support “by citation to some reference work recognized as standard in the pertinent art.” *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21. MPEP §2144.03A. These particular references are highly cited and well-known in the area of operations research and mathematical programming and thus establish what is old and well-known. The cited references merely provide support for the rather general statements in the Official Notices themselves, statements indicating that the general techniques of decomposition and relaxation of large scale optimization problems is old and well known.

Applicant further argues that it is not the case “that Dantzig and Wolfe disclose all of the claim limitations not taught by Hedge.” (Remarks, p.17). In stating this, however, Applicant misconstrues the arguments made in the Office action which are not premised on an anticipation of the limitations, but based on obviousness arguments. The general techniques of supply chain decomposition as claimed in the instant invention are obvious variations of what is taught by Hegde and Eksioglu (as shown below) and what is old and well-known in the art. A person of ordinary skill in the art therefore would have known of the general approaches of decomposition

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of large-scale optimization problems wherein a standard technique described in the cited literature involving the relaxation of certain constraints, is applied to a supply chain problem involving solving an initial subproblem, and then using that solution to obtain a solution to the original problem. The art also fully describes the general techniques of decomposition and relaxation and iteration and its application to a supply chain problem, as further shown in Hegde, thus rendering such application of those techniques to supply chains as an obvious variation of what is taught in the art.

Applicant notes that a paragraph in the rejections to claims 1 and 8 are based on a 'decomposing' step where the particular limitation is not in the actual claims. This was an inadvertent mistake as the claims 1, 8, 15 and 21 were originally grouped together. This particular limitation in the rejections of claims 1 and 8 has been deleted.

***Information Disclosure Statement***

13. The Information Disclosure Statements filed on 27 July 2009 and 12 August 2009 have been considered. Initialed copies of the Form 1449 are enclosed herewith.

***Claim Rejections - 35 USC § 112***

14. The following is a quotation of the second paragraph of 35 U.S.C. §112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
15. Claims 7, 8, 14, 15 and 21 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - **Claims 7 and 14:** recites "said stocking point criteria are associated with..." where the terms 'associated with' is vague and indefinite as the metes and bounds of this 'associating' is

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unstated, vague and a person of ordinary skill in the art would not be apprised of the scope of the claim.

- **Claims 8 and 15:** recites the ‘identifying’ step without use of or by a computer whereas the subsequent method steps are performed using a computer creating some confusion as to what steps are done perhaps mentally and what are performed using a computer. Consequently, the claims are vague and indefinite.
- **Claim 21:** recites the limitation “said material and balance constraints”. There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 101***

16. 35 U.S.C. §101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

17. Claims 8 – 20 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Based on Supreme Court precedent, and recent Federal Circuit decisions, the Office's guidance to examiners is that a §101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780,787-88 (1876). An example of a method claim that would not qualify as a statutory process would be a claim that recited purely mental steps. Thus, to qualify as a §101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state. Examiner notes that while these claims do recite some components of the elements of another statutory class, they are insufficient to substantively tie them to another statutory class in that no correspondence

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is discernable between the various method steps and the particular components of the computer system.

18. Examiner notes that in claims 8 and 15, the step ‘identifying selected ones...’ is not performed using a computer system or a system interface.

### ***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 1 – 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hegde, et al. (US PgPub 20030065415 A1) in view of Eksioglu (*Optimizing Integrated Production, Inventory And Distribution Problems In Supply Chains*) and further in view of Examiner’s **Official Notice**.

#### **Claims 15 and 21:**

Hegde teaches the following limitations as shown.

*A method for solving a linear program having constraints in a production planning system, said method comprising:*

- *identifying selected ones of said material balance and sourcing* (Hegde [0012] states “At a macro level, the problem involves optimally balancing material flows across a supply/demand network given finite available capacity, geographically differentiated supply and demand locations, material processing costs, inventory holding costs, parametric data (e.g., product yields, cycle times, etc.) and the like.” (emphasis added) where ‘balancing material flows’ and ‘supply...locations’ corresponds to *material balance and sourcing constraints.*) *constraints to be relaxed based on stocking point criteria that are associated with time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods*

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*when said parts will be available* (Hegde [0100] teaches that inputs to the LP model are adjusted to relax the LP model. Hegde [0099] bases the relaxation on the Bill of Materials which corresponds to the *stocking point criteria.*);

- *wherein said selected ones of said material balance and sourcing constraints are associated only with the least complex parts within bills-of materials used by said linear program* (Hegde [0090] describes “complex parts”, and in Hegde [0138] states “In each stage, the material requirements from the first pass are met as closely as possible given additional constraints resulting from limited supply availability and capacity resources.” (emphasis added) where the emphasized text corresponds to use of simpler constraints on raw parts since ‘supply availability’ in the context of production planning refers to raw materials, hence *the least complex parts.*), and
- *wherein said least complex parts comprise raw materials and unassembled parts* (see preceding paragraph);
- *decomposing, by a computer system, said linear program into smaller linear programs* (Hegde [title] teaches a decomposition system and method where decomposition means creating a number of smaller independent linear programs.);

Hegde does not specifically teach the following limitations, but Eksioglu, in an analogous art does as shown.

- *relaxing said selected ones of said material balance and sourcing constraints of said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints* (Eksioglu [p.57 and 84] refer to material balance and sourcing constraints. Furthermore, Eksioglu [p.24] describes replacing constraints in a relaxation process which *ipso facto* indicates a changing of the bounds in the original constraint set. See also Hegde [0100].);
- *initially solving, by said computer system, said smaller linear programs with said material balance and sourcing constraints to produce an initial solution* (Eksioglu [p.105] refers to an initial linear approximation based on a relaxed linear programming formulation.),

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- *wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed per said relaxing* (Eksioglu [p.24] describes replacing constraints in a relaxation process.), and
- *wherein said initial solution identifies values for variables in said linear program* (Eksioglu [p.105] refers to an initial linear approximation based on a relaxed linear programming formulation which identifies decision variable values associated with a solution.); and
- *finally solving, by said computer system, said linear program using said values identified in said initial solution as said variables and with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed to obtain a complete solution of said linear program* (Eksioglu [p.10] states “The linear programming relaxation of the extended formulation gives lower bounds that are at least as good as the bounds from the linear programming relaxation of the original formulation.”, and Eksioglu [p.66] notes “Significant for the decomposition is that the inner minimization problem is easier to solve than the original problem [ ].”, and further describes the iterative nature of solving decomposed linear programs that eventually produce a solution to the original problem that do not have relaxed constraints.).

Examiner takes **Official Notice** that it is old and well-known as well as common place in the mathematical programming arts to incorporate the use of decomposition methods wherein constraints are initially relaxed, subproblems solved and constraints restored resulting in a solution using all constraints. Such methods such as first taught in Dantzig and Wolfe and also in Karabuk and Wu teach such techniques where the solution to a relaxed subproblem is used to provide a starting solution to the more complete problem wherein the decomposition is also modeled using stages as in dynamic programming stages wherein the solution of one stage serves as the controlling parameters for the succeeding stages. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hegde with what is old and well known in the art and apply the decomposition techniques using relaxed constraints to a complex supply chain problems (see also e.g., Eksioglu), would have been obvious to try relaxing certain of the constraints with certain characteristics as

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described above and that the technical capability to combine these teachings existed at the time of the invention where the results of such combination were predictable.

**Claims 1 and 8:**

Hegde teaches the following limitations as shown.

*A method for solving a linear program having material balance and sourcing constraints in a production planning system, said method comprising:*

- *identifying, based on stocking point criteria, selected ones of said material balance and sourcing constraints to be relaxed* (Hegde [0012] states “At a macro level, the problem involves optimally balancing material flows across a supply/demand network given finite available capacity, geographically differentiated supply and demand locations, material processing costs, inventory holding costs, parametric data (e.g., product yields, cycle times, etc.) and the like.” (emphasis added) where ‘balancing material flows’ and ‘supply...locations’ corresponds to *material balance and sourcing constraints*. Hegde [0100] teaches that inputs to the LP model are adjusted to relax the LP model. Hegde [0099] bases the relaxation on the Bill of Materials.),
- *wherein said selected ones of said material balance and sourcing- constraints are associated only with the least complex parts within bills-of materials used by said linear program, and wherein said least complex parts comprise raw materials and unassembled parts* (see the rejection of claims 15 and 21 above);

Hegde does not specifically teach the following limitations, but Eksioglu, in an analogous art does as shown.

- *relaxing said selected ones of said material balance and sourcing constraints of said linear program by resetting upper and lower bounds on said selected ones of said material balance and sourcing constraints* (Eksioglu [p.57 and 84] refer to material balance and sourcing constraints. Furthermore, Eksioglu [p.24] describes replacing constraints in a relaxation process. See also Hegde [0100].);
- *initially solving, by said computer system, said linear programs with material balance and sourcing constraints to produce an initial solution* (see the rejection of claims 15 and 21 above.),

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- *wherein, during said initially solving, said selected ones of said material balance and sourcing constraints are relaxed based on stocking point criteria (see the rejection of claims 15 and 21 above.), and*
- *wherein said initial solution identifies values for variables in said linear program (see the rejection of claims 15 and 21 above.);*
- *finally solving, by said computer system, said linear program using said values identified in said initial solution as said variables and with all of said material balance and sourcing constraints in place such that none of said material balance and sourcing constraints are relaxed to obtain a complete solution of said linear program (see the rejection of claims 15 and 21 above.).*

Examiner takes **Official Notice** that it is old and well-known as well as common place in the mathematical programming arts to incorporate the use of decomposition methods wherein constraints are initially relaxed, subproblems solved and constraints restored resulting in a solution using all constraints. Such methods such as first taught in Dantzig and Wolfe (DW) (see DW [abstract, p.101]) and also in Karabuk and Wu (KW) (see KW [p.841, sec. 2.1 describes an iterative process of using subproblems and [p.844] describes relaxation of constraints) teach such techniques where the solution to a relaxed subproblem is used to provide a starting solution to the more complete problem wherein the decomposition is also modeled using stages as in dynamic programming stages wherein the solution of one stage serves as the controlling parameters for the succeeding stages. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hegde with the teachings of Eksioglu and what is old and well known in the art and apply the decomposition techniques using relaxed constraints to complex supply chain problems and would have been obvious to try relaxing certain of the constraints with certain characteristics as described above and that the technical capability to combine these teachings existed at the time of the invention where the results of such combination were predictable.

**Claims 2, 9 and 16:**

Hegde teaches the following limitations as shown.

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- before said initially solving of said linear program, decomposing said linear program into smaller linear programs, wherein said process of initially solving said linear program solves said smaller linear programs simultaneously in parallel (Hegde [0076] states “While the present invention is independent of the computer/system architecture, one advantage is the use of multiple solution methods by decomposing the problem into independent subproblems. Furthermore, the decomposition based approach is suitable for parallel programming to reduce computation time.” (emphasis added)).

**Claim 4:**

Hegde teaches the following limitations as shown.

- wherein said selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints (Hegde [0050] states “...automatically assigning part numbers to LP or Heuristic processing depending upon the complexity and connections of the part to other parts through the bills of material supply chain.” (emphasis added) and in [0085] states “a determination is made of which parts directly require LP processing because of their inherent complexity. Parts are considered inherently complex, and thus directly require LP processing...” as said constraints that can be temporarily relaxed (Hegde [0100] refers to a relaxed LP model)..

**Claim 5:**

Hegde teaches the following limitations as shown.

- wherein said selected ones of said material balance and sourcing constraints are associated with parts that are available during the planning horizon of said linear program (Hegde [0050] states “...automatically assigning part numbers to LP or Heuristic processing depending upon the complexity and connections of the part to other parts through the bills of material supply chain.” (emphasis added) and in [0085] states “a determination is made of which parts directly require LP processing because of their inherent complexity. Parts are considered inherently complex, and thus directly require LP processing...” as said constraints that can be temporarily relaxed (Hegde [0100] refers to a relaxed LP model. Hegde [0138] “In each stage, the material requirements

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from the first pass are met as closely as possible given additional constraints resulting from limited supply availability and capacity resources.”).

**Claims 6, 13 and 20:**

Hegde teaches the following limitations as shown.

- *said planning horizon includes an initial planning horizon* (Hegde [0019] states “[A]dvanced production planning and scheduling decision support systems are typically run on a weekly basis, however, the planning horizon for such runs may range several years depending on the planning horizon of interest and the level of detail in forecasting.” (emphasis added), *shipping lead time* (Hegde [0106] “*shipping lead time*”), *and manufacturing cycle time* (Hegde [0012] states “At a macro level, the problem involves optimally balancing material flows across a supply/demand network given finite available capacity, geographically differentiated supply and demand locations, material processing costs, inventory holding costs, parametric data (e.g., product yields, cycle times, etc.) and the like.”).

**Claims 7 and 14:**

Hegde teaches the following limitations as shown.

- *said stocking point criteria are associated with time dependent stocking points comprising part numbers, locations of parts identified by said part numbers, and the time periods when said parts will be available* (Hegde [0039] states “There are several key pieces of data that are required for EESCP. One key source of data is the Bill of Material (BOM). The BOM is the source of data that specifies components used in the assembly of each particular PN produced within the manufacturing system. The BOM can be used to generate a graphical representation of the stages within a manufacturing process for each of the produced finished products. The BOM also plays an important role in defining the structure of the supply-chain. For example, in FIG. 1, the aggregate stages involve many steps each of which can significantly impact the flow of materials through the manufacturing system.” (emphasis added) wherein ‘the flow...’ corresponds to relating to *the time periods...* See also Hegde [0023] *inter alia* and [0012] regarding inventory holding costs.).

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**Claims 11 and 18:**

Hegde teaches the following limitations as shown.

- *said selected ones of said material balance and sourcing constraints are associated with parts that have supply availability and lack capacity constraints* (Hegde [0138] “In each stage, the material requirements from the first pass are met as closely as possible given additional constraints resulting from limited supply availability and capacity resources.”).

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**Claims 12 and 19:**

Hegde teaches the following limitations as shown.

- *said selected ones of said material balance and sourcing constraints are associated with parts that are available during the planning horizon of said linear program (see the rejection of claims 11 and 18. See also Hegde [0103]).*

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **Mark A. Fleischer** whose telephone number is **571.270.3925**. The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **Bradley Bayat** whose telephone number is **571.272.6704** may be contacted.

The prior art made of record and not relied upon that is considered pertinent to applicant's disclosure are:

- Karabuk, et al. "Coordinating Strategic Capacity Planning In The Semiconductor Industry".
- George B. Dantzig, G. B., et al. "Decomposition Principle for Linear Programs",
- Chu, S. "A mathematical programming approach towards optimized master production scheduling"
- Chen, H, et al. "A Lagrangian Relaxation Approach For Supply Chain Planning With Order/Setup Costs And Capacity Constraints"

and describe the use of mathematical programming techniques including relaxation and decomposition in the context of supply chain management.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair> <<http://pair-direct.uspto.gov>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866.217.9197** (toll-free).

Any response to this action should be mailed to:

**Commissioner of Patents and Trademarks**

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to **571-273-8300**.

Hand delivered responses should be brought to the **United States Patent and Trademark Office Customer Service Window:**

Randolph Building

401 Dulany Street

Alexandria, VA 22314.

Mark A. Fleischer  
/Mark A Fleischer/  
Examiner, Art Unit 3624      15 November 2009

/Bradley B Bayat/

Supervisory Patent Examiner, Art Unit 3624